

SEQUENCE LISTING

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<110>  Thiry, Michel
      Dheur, Ingrid

<120>  Piscirickettsia Salmonis Antigens and Use Thereof

<130>  425.1018

<140>  10/574,639
<141>  2006-09-15

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<151>  2004-10-01

<150>  2003/0743
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<170>  PatentIn version 3.3

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gcg act gcc gca aat gcc gct gat aat ggt aag ctt caa tta caa atc      96
Ala Thr Ala Ala Asn Ala Ala Asp Asn Gly Lys Leu Gln Leu Gln Ile
20          25          30

aac caa ttg aag gcg caa cac act caa ctt caa cag caa gtt gct aat      144
Asn Gln Leu Lys Ala Gln His Thr Gln Leu Gln Gln Gln Val Ala Asn
35          40          45

ctg caa ggt caa gcc caa act act ggt gcc gtt cac gtt gcc gct gtt      192
Leu Gln Gly Gln Gly Gln Thr Thr Gly Ala Val His Val Gly Ala Val
50          55          60

ggg ggt gaa cta atc tct gaa aat aac tac gat ggt cgt gcc tta gat      240
Gly Gly Glu Leu Ile Ser Glu Asn Asn Tyr Asp Gly Arg Gly Leu Asp
65          70          75          80

ctt ctt aaa tca tta gcg aaa gca gcc agc aat gca ccg tta tta act      288
Leu Leu Lys Ser Leu Ala Lys Ala Gly Ser Asn Ala Pro Leu Leu Thr
85          90          95

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| att ggt ggt acg tta gaa gct gat gcg caa atg aac cgt aac ggt aat Ile Gly Gly Thr 100 Leu Glu Ala Asp 105 Gln Met Asn Arg Asn Gly Asn 110 | 336 |
| gtt gga tct ggt tct act tct ggt gac cct tct ggc ctt aac tat act Val Gly Ser Gly Ser Thr Ser Gly Asp 120 Pro Ser Gly Leu Asn Tyr Thr 125 | 384 |
| gat gga act agc agt tct gca ttc tat tta gat act gca cgt att gat Asp Gly Thr Ser Ser Ser Ala Phe Tyr Leu Asp 135 Thr Ala Arg Ile Asp 140 | 432 |
| atc tta gcg cat gtg aat gac tgg gtt aac ggt gaa atc tgc tat gac Ile Leu Ala His Val Asn Asp 150 Trp Val Asn Gly Glu Ile Ser Tyr Asp 160 | 480 |
| tta aat ggt gat agt ggt ctt cac act ggt agc ctt tta gtg ggt aac Leu Asn Gly Asp 165 Ser Gly Leu His Thr Gly Ser Leu Leu Val Gly Asn 175 | 528 |
| ctc aat caa tta cca gtt tat ggt caa atc ggt aaa ttc tac cca gat Leu Asn Gln Leu Pro Val Tyr Gly Gln Ile Gly Lys Phe Tyr Pro Asp 180 185 190 | 576 |
| gca ggt ttg ttt gaa tta gct agt gat gat gtt tat tct tct agc tta Ala Gly Leu Phe Glu Leu Ala Ser Asp 195 Asp Val Tyr Ser Ser Ser Leu 200 205 | 624 |
| gtc aag cgt tat ttc cgt cca gat gcg caa aat ggt gca tct gta ggc Val Lys Arg Tyr Phe Arg Pro Asp 210 Ala Gln Asn Gly Ala Ser Val Gly 215 220 | 672 |
| ttc tat aaa gca ggc tta cat act tct tta act gca ttt aaa acg tct Phe Tyr Lys Ala Gly Leu His Thr Ser Leu Thr Ala Phe Lys Thr Ser 225 230 235 240 | 720 |
| gct cca caa gct aat gct gct aac tat aac caa gca act agt gat tgg Ala Pro Gln Ala Asn Ala Ala Asn Tyr 245 Asp Gln Ala Thr Ser Asp Trp 250 255 | 768 |
| tct gca caa gcg gat tac act ttt aat gca ggt caa gtc aat gcc act Ser Ala Gln Ala Asp Tyr Thr Phe Asn Ala Gly Gln Val Asn Ala Thr 260 265 270 | 816 |
| ata ggt gca ggt tac tta tct aat atg gtg aat acc aat gac agc ttc Ile Gly Ala Gly Tyr Leu Ser Asn Met Val Asn Thr Asn Asp Ser Phe 275 280 285 | 864 |
| act gca aca ggt gca gga act ggt aca caa aaa gat cgg cta ccg atg Thr Ala Thr Gly Ala Gly Thr Gly Thr Gln Lys Asp Arg Leu Pro Met 290 295 300 | 912 |
| gct aat gta agc gct aag att ggc ttt ggt cca ttt gaa gcc ctt gct Ala Asn Val Ser Ala Lys Ile Gly Phe Gly Pro Phe Glu Ala Leu Ala 305 310 315 320 | 960 |
| act tat gct caa aca tta aaa ggt ttg gcg aat act aca ggt ggt aca | 1008 |

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| | 325 | | 330 | 335 | |
| acg aag ttg aaa gcc ttt gat tta gaa ggt gct tac cac ttc caa gct | | | | | 1056 |
| Thr Lys Leu Lys Ala Phe Asp Leu Glu Gly Ala Tyr His Phe Gln Ala | 340 | 345 | 350 | | |
| gtg aag cag atg act gtg atg tta ggt tat agc cgt aca tat ggc ttt | | | | | 1104 |
| Val Lys Pro Met Thr Val Met Leu Gly Tyr Ser Arg Thr Tyr Gly Phe | 355 | 360 | 365 | | |
| gat aag gtt gga cct gtt gat cag ttt att gat ggt aat act gcg att | | | | | 1152 |
| Asp Lys Val Gly Pro Val Asp Gln Phe Ile Asp Gly Asn Thr Ala Ile | 370 | 375 | 380 | | |
| act atc aat aac aaa aaa gac caa tgg tta ttg ggt gta aac tct gaa | | | | | 1200 |
| Thr Ile Asn Asn Lys Lys Asp Gln Trp Leu Gly Val Asn Ser Glu | 385 | 390 | 395 | 400 | |
| gta ttt aag aac aca acg gtt ggt ctt gag tat gcg cgt gta ggt cag | | | | | 1248 |
| Val Phe Lys Asn Thr Thr Val Gly Leu Glu Tyr Ala Arg Val Gly Gln | 405 | 410 | 415 | | |
| ctt gat agc aca ggt act gac act aac cgc tac aac gta ttg act gcg | | | | | 1296 |
| Leu Asp Ser Thr Gly Thr Asp Thr Asn Arg Tyr Asn Val Leu Thr Ala | 420 | 425 | 430 | | |
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| Asn Gln Leu Lys Ala Gln His Thr Gln Leu Gln Gln Gln Val Ala Asn | | | | | |
| | 35 | | 40 | 45 | |
| | | | | | |
| Leu Gln Gly Gln Gly Gln Thr Thr Gly Ala Val His Val Gly Ala Val | | | | | |
| | 50 | | 55 | 60 | |
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| 65 | 70 | | 75 | 80 | |

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Ile Gly Gly Thr Leu Glu Ala Asp Ala Gln Met Asn Arg Asn Gly Asn
100 105 110

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Asp Gly Thr Ser Ser Ser Ala Phe Tyr Leu Asp Thr Ala Arg Ile Asp
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Phe Tyr Lys Ala Gly Leu His Thr Ser Leu Thr Ala Phe Lys Thr Ser
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275 280 285

Thr Ala Thr Gly Ala Gly Thr Gly Thr Gln Lys Asp Arg Leu Pro Met
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Ala Asn Val Ser Ala Lys Ile Gly Phe Gly Pro Phe Glu Ala Leu Ala
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Thr Lys Leu Lys Ala Phe Asp Leu Glu Gly Ala Tyr His Phe Gln Ala
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Val Lys Pro Met Thr Val Met Leu Gly Tyr Ser Arg Thr Tyr Gly Phe
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Thr Ile Asn Asn Lys Lys Asp Gln Trp Leu Leu Gly Val Asn Ser Glu
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Val Phe Lys Asn Thr Thr Val Gly Leu Glu Tyr Ala Arg Val Gly Gln
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cac act caa ctt caa cag caa gtt gct aat ctg caa ggt caa ggc caa 96
His Thr Gln Leu Gln Gln Gln Val Ala Asn Leu Gln Gly Gln Gly Gln
20 25 30
act act ggt gcc gtt cac gtt ggc gct gtt ggt ggt gaa cta atc tct 144

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| 35 40 45 | |
| gaa aat aac tac gat ggt cgt ggc tta gat ctt ctt aaa tca tta gcg | 192 |
| Glu Asn Asn Tyr Asp Gly Arg Gly Leu Asp Leu Leu Lys Ser Leu Ala | |
| 50 55 60 | |
| aaa gca ggc agc aat gca cgc tta tta act att ggt ggt acg tta gaa | 240 |
| Lys Ala Gly Ser Asn Ala Pro Leu Leu Thr Ile Gly Gly Thr Leu Glu | |
| 65 70 75 80 | |
| gct gat gcg caa atg aac cgt aac ggt aat gtt gga tct ggt tct act | 288 |
| Ala Asp Ala Gln Met Asn Arg Asn Gly Asn Val Gly Ser Gly Ser Thr | |
| 85 90 95 | |
| tct ggt gac cct tct ggc ctt aac tat act gat gga act agc agt tct | 336 |
| Ser Gly Asp Pro Ser Gly Leu Asn Tyr Thr Asp Gly Thr Ser Ser Ser | |
| 100 105 110 | |
| gca ttc tat tta gat act gca cgt att gat atc tta gcg cat gtg aat | 384 |
| Ala Phe Tyr Leu Asp Thr Ala Arg Ile Asp Ile Leu Ala His Val Asn | |
| 115 120 125 | |
| gac tgg gtt aac ggt gaa atc tcg tat gac tta aat ggt gat agt ggt | 432 |
| Asp Trp Val Asn Gly Glu Ile Ser Tyr Asp Leu Asn Gly Asp Ser Gly | |
| 130 135 140 | |
| ctt cac act ggt agc ctt tta gtg ggt aac ctc aat caa tta cca gtt | 480 |
| Leu His Thr Gly Ser Leu Leu Val Gly Asn Leu Asn Gln Leu Pro Val | |
| 145 150 155 160 | |
| tat ggt caa atc ggt aaa ttc tac cca gat gca ggt ttg ttt gaa tta | 528 |
| Tyr Gly Gln Ile Gly Lys Phe Tyr Pro Asp Ala Gly Leu Phe Glu Leu | |
| 165 170 175 | |
| gct agt gat gat gtt tat tct tct agc tta gtc aag cgt tat ttc cgt | 576 |
| Ala Ser Asp Asp Val Tyr Ser Ser Ser Leu Val Lys Arg Tyr Phe Arg | |
| 180 185 190 | |
| cca gat gcg caa aat ggt gca tct gta ggc ttc tat aaa gca ggc tta | 624 |
| Pro Asp Ala Gln Asn Gly Ala Ser Val Gly Phe Tyr Lys Ala Gly Leu | |
| 195 200 205 | |
| cat act tct tta act gca ttt aaa acg tct gct cca caa gct aat gct | 672 |
| His Thr Ser Leu Thr Ala Phe Lys Thr Ser Ala Pro Gln Ala Asn Ala | |
| 210 215 220 | |
| gct aac tat aac caa gca act agt gat tgg tct gca caa gcg gat tac | 720 |
| Ala Asn Tyr Asn Gln Ala Thr Ser Asp Trp Ser Ala Gln Ala Asp Tyr | |
| 225 230 235 240 | |
| act ttt aat gca ggt caa gtc aat gcc act ata ggt gca ggt tac tta | 768 |
| Thr Phe Asn Ala Gly Gln Val Asn Ala Thr Ile Gly Ala Gly Tyr Leu | |
| 245 250 255 | |
| tct aat atg gtg aat acc aat gac agc ttc act gca aca ggt gca gga | 816 |
| Ser Asn Met Val Asn Thr Asn Asp Ser Phe Thr Ala Thr Gly Ala Gly | |

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| act ggt aca caa aaa gat | cgg cta ccg atg gct aat | gta agc gct aag | 864 |
| Thr Gly Thr Gln Lys Asp | Arg Leu Pro Met Ala Asn | Val Ser Ala Lys | |
| 275 | 280 | 285 | |
| att ggc ttt ggt cca ttt | gaa gcc ctt gct act tat | gct caa aca tta | 912 |
| Ile Gly Phe Gly Pro Phe | Glu Ala Leu Ala Thr Tyr | Ala Gln Thr Leu | |
| 290 | 295 | 300 | |
| aaa ggt ttg gcg aat act | aca ggt ggt aca acg aag | ttg aaa gcc ttt | 960 |
| Lys Gly Leu Ala Asn Thr | Thr Gly Gly Thr Lys Leu | Lys Ala Phe | |
| 305 | 310 | 320 | |
| gat tta gaa ggt gct tac | cac ttc caa gct gtg aag | ccg atg act gtg | 1008 |
| Asp Leu Glu Gly Ala Tyr | His Phe Gln Ala Val Lys | Pro Met Thr Val | |
| 325 | 330 | 335 | |
| atg tta ggt tat agc cgt | aca tat ggc ttt gat aag | gtt gga cct gtt | 1056 |
| Met Leu Gly Tyr Ser Arg | Thr Tyr Gly Phe Asp Lys | Val Gly Pro Val | |
| 340 | 345 | 350 | |
| gat cag ttt att gat ggt | aat act gcg att act atc | aat aac aaa aaa | 1104 |
| Asp Gln Phe Ile Asp Gly | Asn Thr Ala Ile Thr Ile | Asn Asn Lys Lys | |
| 355 | 360 | 365 | |
| gac caa tgg tta ttg ggt | gta aac tct gaa gta ttt | aag aac aca acg | 1152 |
| Asp Gln Trp Leu Leu Gly | Val Asn Ser Glu Val Phe | Lys Asn Thr Thr | |
| 370 | 375 | 380 | |
| gtt ggt ctt gag tat gcg | cgt gta ggt cag ctt gat | agc aca ggt act | 1200 |
| Val Gly Leu Glu Tyr Ala | Arg Val Gly Leu Asp Ser | Thr Gly Thr | |
| 385 | 390 | 400 | |
| gac act aac cgc tac aac | gta ttg act gcg gat atg | act gtt aag ttc | 1248 |
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| 20 | 25 | 30 | |
| Thr Thr Gly Ala Val His | Val Gly Ala Val Gly Gly | Glu Leu Ile Ser | |
| 35 | 40 | 45 | |

Glu Asn Asn Tyr Asp Gly Arg Gly Leu Asp Leu Leu Lys Ser Leu Ala
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Lys Ala Gly Ser Asn Ala Pro Leu Leu Thr Ile Gly Gly Thr Leu Glu
 65 70 75 80

Ala Asp Ala Gln Met Asn Arg Asn Gly Asn Val Gly Ser Gly Ser Thr
 85 90 95

Ser Gly Asp Pro Ser Gly Leu Asn Tyr Thr Asp Gly Thr Ser Ser Ser
 100 105 110

Ala Phe Tyr Leu Asp Thr Ala Arg Ile Asp Ile Leu Ala His Val Asn
 115 120 125

Asp Trp Val Asn Gly Glu Ile Ser Tyr Asp Leu Asn Gly Asp Ser Gly
 130 135 140

Leu His Thr Gly Ser Leu Leu Val Gly Asn Leu Asn Gln Leu Pro Val
 145 150 155 160

Tyr Gly Gln Ile Gly Lys Phe Tyr Pro Asp Ala Gly Leu Phe Glu Leu
 165 170 175

Ala Ser Asp Asp Val Tyr Ser Ser Ser Leu Val Lys Arg Tyr Phe Arg
 180 185 190

Pro Asp Ala Gln Asn Gly Ala Ser Val Gly Phe Tyr Lys Ala Gly Leu
 195 200 205

His Thr Ser Leu Thr Ala Phe Lys Thr Ser Ala Pro Gln Ala Asn Ala
 210 215 220

Ala Asn Tyr Asn Gln Ala Thr Ser Asp Trp Ser Ala Gln Ala Asp Tyr
 225 230 235 240

Thr Phe Asn Ala Gly Gln Val Asn Ala Thr Ile Gly Ala Gly Tyr Leu
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Ser Asn Met Val Asn Thr Asn Asp Ser Phe Thr Ala Thr Gly Ala Gly
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Thr Gly Thr Gln Lys Asp Arg Leu Pro Met Ala Asn Val Ser Ala Lys
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Ile Gly Phe Gly Pro Phe Glu Ala Leu Ala Thr Tyr Ala Gln Thr Leu
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Lys Gly Leu Ala Asn Thr Thr Gly Gly Thr Thr Lys Leu Lys Ala Phe
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Met Leu Gly Tyr Ser Arg Thr Tyr Gly Phe Asp Lys Val Gly Pro Val
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Asp Gln Trp Leu Leu Gly Val Asn Ser Glu Val Phe Lys Asn Thr Thr
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